Crop Production News

VOLUME 35, NO. 5

AUGUST 9, 2013

CROPS AGRICULTURE

EDITOR'S COMMENTS

by Sean Miller, PAg.
Provincial Specialist, Plant Disease

At this time of year, it is easy to get caught up in preparations for harvest. Nonetheless, whether you are a farmer, researcher or agronomist, it is important to continue monitoring fields whenever possible and to record the latest crop conditions, weather and pest observations from this season. Making notes on the problems that came up this year and how they were solved will help to predict issues before they arise next time. Some diseases may become more obvious as the crop matures. This is one of the reasons the Ministry does some of our disease surveys just before swathing or harvest.

If you are applying a crop protection product this time of year, please remember to follow the pre-harvest interval guidelines. Refer to the crop protection product label or the product information in the 2013 Guide to Crop Protection for more information on a specific product's pre-harvest interval.

Harvest of winter cereals and pulses will begin soon in some regions of the province. For more information on the progress of the 2013 crop, consult the Saskatchewan Ministry of Agriculture's weekly Crop Report or follow it on Twitter at @SKGovAg.

Crop Production News is a bi-weekly publication prepared primarily by provincial specialists with the Crops and Irrigation and Regional Services branches of the Saskatchewan Ministry of Agriculture. It is a compilation of articles related to entomology, plant pathology, weed science, soils and agronomy issues.

Please do not use any of these articles for any other purpose without first asking the author's permission.

If you wish to be added to or removed from our mailing list, forward your request by email to:
cpn@gov.sk.ca

IN THIS ISSUE

Tips for Seeding Winter Wheat	2
Class Changes in Winter Wheat	2
Using Growing Degree Days to Estimate Maturity	3
Pre-Harvest Weed Control and Desiccants	4
Insect Update	5
Crop Protection Lab News	6

Government of Saskatchewan
Ministry of Agriculture

TIPS FOR SEEDING WINTER WHEAT

by Ken Panchuk, PAg
Provincial Specialist, Soils

The key to a successful winter wheat crop is establishing a healthy stand of winter wheat, while keeping as much stubble as possible standing to collect and hold that first insulating blanket of snow. Below are a number of tips for successfully establishing winter wheat.

1) Seeding of winter wheat may start in late August for the northern grainbelt and early September for the south.

2) Select a field of canola stubble. Why canola stubble? Canola stubble is free of green volunteer cereals, preventing the transfer of wheat streak mosaic virus (WSMV) to the new winter wheat plants. Stay away from adjacent fields of green cereals. Neighbouring fields of cereals, especially wheat and barley, need to be mature for about a week so as to not be a possible source of WSMV. The virus is spread by the wheat curl mite from the old crop to the field edges of the establishing winter wheat.

3) Seeding depth must be shallow, one inch or less even when the seedbed is dry. Shallow seeding allows the seed to benefit from the small amounts of fall rain that can get the winter wheat started earlier. It is important to get three or four leaves developed before freeze-up.

4) Apply starter phosphate using a fall soil test or the soil test information from the previous crop for that field. Apply the phosphate in the seedrow but do not exceed the safe rate of phosphate applied with the seed. Consider adding some starter potash as well: research has shown an improvement in winter hardiness when starter amounts of potassium were applied. The combined phosphate plus potassium should not exceed the maximum safe rate of phosphate applied with the seed. Most zero-till seeders have side- or midrow-banding capability, so apply some starter phosphate with the seed and the rest of the nutrients in the side or midrow position to minimize injury to emerging seedlings. Caution: the seedbed is generally dry at that time of the year so lower levels of starter fertilizer (approx. 15 lb. of phosphate per acre) should be placed in the seed row while side- or midrow-banding the rest along with the other nutrients.

5) Winter wheat has high yield potential so managing nitrogen is important. Today, there are several options available for managing nitrogen. One option is to apply all the nitrogen at the time of seeding using polycoated urea placed in side or midrow position along with the extra phosphate and potassium. The polycoat will protect the urea from losses until the soil warms up in spring. Another option would be to apply some nitrogen with the phosphate and potassium. Then, in the spring when the winter wheat starts to grow, broadcast the rest of the required nitrogen as urea or urea treated with Agrotain urease inhibitor.

6) Refer to the next article for information on changes to the winter wheat classes. Also, the University of Saskatchewan has informative website on winter cereal production with recommendations from 30 years of research conducted in Saskatchewan.

CLASS CHANGES IN WINTER WHEAT NOW IN EFFECT

by Mitchell Japp, PAg
Provincial Specialist, Cereal Crops

It is now a new crop year, and, as of August 1, 2013, four winter wheat varieties are no longer eligible for the Canada Western Red Winter class.

CDC Clair, CDC Harrier, CDC Kestrel and CDC Raptor are now in the Western General Purpose class.

On August 1, 2014, CDC Falcon will also be moved to the Western General Purpose class.

This change is to improve the consistency within the Canada Western Red Winter class. The range of quality had previously been managed by dividing the class into select and generic categories. Select had higher protein and better milling qualities. After August 1, 2014, only the varieties with higher protein and the best milling qualities will be left in Canada Western Red Winter class.

Producers need to assess how these changes will affect their marketing plans. These varieties are still eligible for production, but will be targeted towards the ethanol or animal feed markets. Producers who are targeting milling wheat production need to buy new seed this year. Sources of seed can be found using the Canadian Seed Growers' Association Seed Locator tool. In some circumstances, producers may be able to sell grain on specifications for their crop, but options would be more limited.

The *Varieties of Grain Crops 2013* has information on varieties of winter wheat eligible for Canada Western Red Winter class or Western General Purpose class. Beyond their target market, producers should review what yield and protein targets they have, as well as what diseases they need to plan for. The *Varieties* guide provides relative rankings for several diseases and other characteristics such as lodging or maturity.

USING GROWING DEGREE DAYS TO ESTIMATE MATURITY

by Dale Risula, PAg
Provincial Specialist, Special Crops

For crops to mature, they need sufficient heat units during the growing season. This becomes even more important if seeding is delayed.

Saskatchewan Agriculture's *Varieties of Grain Crops* describes the relative maturity ratings of different crops and varieties, comparing the time required from seeding to swathing readiness. Crop maturity can also be affected by agronomic factors, so it is important to be aware of crop development throughout the growing season.

Many producers use Growing Degree Days (GDD) as a tool to measure crop development. This method predicts crop maturity based on climatic conditions in the region. It is very useful because plant growth and development are based on heat accumulation.

The GDD equation is as follows:

> Daily GDD = ((Tmax + Tmin) ÷ 2) – Tbase
>
> T max = the daily maximum air temperature
>
> T min = the daily minimum air temperature

As an example, a day with a maximum temperature of 20 C and minimum temperature of 10 C would have a GDD accumulation of (20 + 10) ÷ 2 – 5 = 10. The Tbase is 5 as that is considered the minimum temperature for plant growth.

All crops have specific requirements for heat accumulation or GDD to reach maturity. The table below presents research by Brian Fowler and Brian Duggan of the University of Saskatchewan showing average GDD requirements for crop varieties commonly grown in Saskatchewan.

Table 1: Different crops GDD requirements
Source: University of Saskatchewan

Crop	GDD requirement
Flax	1,200
HRS wheat	1,175
Argentine canola	1,040
Oats	961
Barley	850
Polish canola	850

Based on this information, in an average year (using historical data), canola seeded at Kindersley on May 1 and requiring 1,040 GDD would have an expected maturity date of approximately August 25. If it were seeded on May 25, the expected maturity date would be September 19. Maturation is shortened by

roughly seven days because of higher temperatures in mid-to-late-August compared to early May.

At the Agriculture and Agri-Food Canada Scott Research Station, Stu Brandt's research showed that canola crops require the most GDD during seed fill while cereal crops have their major GDD requirement during vegetative growth (Table 2). Hot weather in early summer would be of most benefit to the cereals, and warm August days would help canola more.

Table 2: Summary of crop thermal requirement (GDD 5C base)
Source: Stu Brandt, AAFC Scott, 1993-1997, unpublished.

Crop	emergence to flowering	start to end of flowering	end of flowering to maturity	Total GDD
B. napus	375	222	413	1,010 - 1,063
B. rapa	284	241	366	891 - 938
B. juncea	294	241	425	960 - 1,006
S. alba	280	254	438	972 - 1,011
Flax	429	165	410	1,004 - 1,050
Pea	545	165	292	911 - 960
Lentils	507	198	338	1,043 - 1,088
Wheat	525	135	346	1,006 - 1,046

Although this is a good model for estimating maturity, other factors such as extreme temperature at flowering and plant sensitivity to day length may cause changes in these estimations.

The following are some weather-related websites providing detailed historical weather data that can be tailored to fit individual needs:

- The Winter Cereals Weather Manager (www.wintercereals.ca/weathermanager) is useful for estimating probability of maturity by a specific date for different crops and locations based on GDD and seeding dates.
- Farm Zone (www.farmzone.com) provides growing degree days on a daily basis or an accumulation for a specified time period.
- The websites www.weatheroffice.gc.ca and http://weatherfarm.weatherbug.com provide good planning data also.

To accommodate warm-season crops such as corn and soybean, "crop heat units" (CHUs) are used independently of GDDs since they represent a very different, temperature-dependent development model.

For more information about these tools, contact a Regional Crops Specialist or the Agriculture Knowledge Centre at 1-866-457-2377.

PRE-HARVEST WEED CONTROL AND DESICCANTS

by Brent Flaten, PAg, CCA Integrated Pest Management Specialist

Glyphosate can be used prior to the harvest of selected crops or forages; however, because it does not act quickly like a desiccant, glyphosate should be used primarily for weed control or perennial forage termination. If the condition of the weeds is poor, or if they are nearing maturity (for example, foxtail barley or perennial sow thistle), an application of glyphosate may result in reduced weed control.

Only use glyphosate prior to harvest on registered crops. Grain buyers are increasingly checking for unregistered pesticide residues in grain they purchase. In some cases, even buyers of registered crops (particularly malt barley, milling oats and lentils) have additional restrictions. Therefore, it is a good idea for producers to check with their grain buyer prior to spraying. To ensure low glyphosate residues in marketed crops, be sure not to exceed the labelled rate and apply when the seed moisture is 30 per cent or less.

If a herbicide that suppresses perennial thistles was used in-crop, make sure thistles have enough regrowth to ensure adequate glyphosate uptake and movement within the plant. Applying pre-harvest glyphosate to short-season crops in southern Saskatchewan prior to August may result in reduced weed control. Perennial weeds may not yet be actively moving nutrients into the roots before August, and post-harvest applications may be more appropriate.

Dandelions may be covered by a thick canopy of crop, making it tough for spray to reach them, which may reduce control. Post-harvest application may be better-suited to control dandelions in this case.

"Desiccation" or "harvest aid" herbicides quickly dry down crops to provide better harvesting conditions; however, they do not control the roots of perennial weeds. They are used extensively on more indeterminate crops such as pulses. Reglone (diquat) has been the most common herbicide for this use, but several more products have been registered recently. Syngenta has introduced a low-cost version of diquat called Desica. Other products include Aim/CleanStart, Valtera/Chateau, Heat (saflufenacil) and MPOWER Good Harvest (glufosinate). Although these products may be registered for use, maximum residue limits (MRLs) may vary between importing countries. So it is extremely important to talk with buyers to see what products are acceptable in what markets.

Saskatchewan Pulse Growers, Manitoba Pulse Growers Association and Alberta Pulse Growers have recently sent out a grower advisory dated July 24, 2013, regarding the use of these products.

Recommendations include:

1) Do not exceed the product's labelled rate.
2) Time the application according to the label.
3) Consult with an exporter/processor about which desiccants are acceptable in international markets.

Included in the document is a chart that explains MRL issues for various products in different markets.

INSECT UPDATE

by Scott Hartley, PAg
Provincial Specialist, Insect and Vertebrate Pests

Populations exceeding economic thresholds of **bertha armyworm** larvae have been reported in several areas of Saskatchewan. The reports have been on canola primarily but also on mustard and flax. Initially, infestations were reported in the southwestern region (Hazelet/Cabri), where crops are generally more advanced than elsewhere in the province.

In the past week, spraying for bertha armyworm caterpillars was reported in pockets in other regions. The larvae have been reported at various stages from early instars in the northeast to more advanced larvae in the south. Depending on the stage of the larvae and vegetative growth of the plants, the extent of damage from bertha armyworm will vary. Smaller larvae will not cause as extensive damage as the later, larger larval stages. Feeding on leaves will be less damaging. Feeding on canola pods will have the most direct effect on the yield of the crop. Control should be based on economic thresholds. Refer to the Bertha Armyworm factsheet for more information on economic thresholds.

When using insecticides to control bertha armyworm keep in mind the pre-harvest intervals associated with the products. Chlorpyrifos is not to be used in flowering crops and weeds. Insecticides, if acceptable for use in flowering canola crops, should be applied in the evenings when pollinators are not active in the field. Bertha armyworm larvae are also more active in the evening so will be more likely to be contacted with spray application.

Bertha armyworms on a wheat head.
Photo courtesy of Dan Johnson.

Wheat head armyworm (*Farronta diffusa* [Walker]) was identified in wheat at the Crop Diagnostic School in Indian Head at the end of July. The distribution of this occasional

pest in Saskatchewan in 2013 is not known. Larvae are usually green but can be green or tan as they mature, with longitudinal stripes along the body.

Eggs are laid on vegetative parts of the plant. Larval feeding on leaves is generally not serious but feeding on the head and soft developing kernels can affect both yield and grade of the wheat. Larvae are commonly found in thick crop stands in lower areas of the field and where lodging occurs.

Swede midge damaged flowers on canola in northeastern Saskatchewan.
Photo courtesy of Saskatchewan Agriculture.

Swede midge (*Contarinia nasturtii* [Keifer]) has been found in canola fields in northeastern Saskatchewan. Damage is similar to symptoms noted in 2012 where flower petals remain fused and did not open. When the petals are split apart, small translucent larvae can be found inside the flower. The swede midge has become a serious problem in canola in Ontario, and control is complicated by over-lapping generations of swede midge during the growing season. Although both Matador and Coragen are registered for control of the swede midge, there are no recommendations for timing of effective control. Once larvae are inside the floret, control from a contact insecticide is not possible. The Saskatchewan Ministry of Agriculture has posted a document with questions and answers on swede midge on page 6 of the last Crop Production News.

Grasshoppers have been reported in a number of crops. Some of the higher infestations have been reported in northern areas—Meadow Lake, Nipawin and Choiceland. However, smaller numbers of grasshoppers can be a problem in more advanced crops. Two grasshoppers per square metre can result in significant yield loss to lentil pods and flax in the green boll stage. If grasshoppers are feeding on canola pods, there is a more direct effect on yield. Similarly, if the flag leaf on cereals is being consumed, the economic threshold should be reduced since the flag leaf is responsible for much of the head filling in wheat.

CROP PROTECTION LABORATORY NEWS

by Cecilia Peluola, PAg
Supervisor, Crop Protection Laboratory

Various leaf spots and leaf blights of wheat, barley and corn were submitted in the last two weeks. Phyllody—an abnormal development of floral parts into leafy structures, a situation in which small fully expanded leaves (plantlets) sprout from every part of the strawberry fruit—was among the submissions to the lab in the last two weeks. This disease is caused by either aster yellows phytoplasmas or an

Aster yellow symptom on strawberry.
Photo courtesy of Saskatchewan Agriculture.

environmental factor. Survival, spread and reproduction of aster yellows requires a living plant and insect host. The most important insect host in Saskatchewan is the six-spotted leaf hopper, which transmits the pathogen to different types of crop and fruit as it feeds. Refer to the aster yellows factsheet for more information on the spread and management of this disease.

Chemical injuries continue to be prominent in lab submissions this season. Crops such as canola, wheat, barley, pea, lentil and chickpea made up most of the submissions. For more information on sprayer tank herbicide cleaning, injury and handling, refer to page 5 of the last Crop Production News.

Important diseases/disorder:

- Root rot of lentil and pea – *Rhizoctonia solani, Pythium* sp. *and Fusarium* spp
- Septoria leaf blotch complex of durum/ wheat – *Septoria tritici*
- Bacteria blight of wheat – *Pseudomonas syringae*
- Halo blight of oats – *Pseudomonas coronafaciens*

Dutch elm disease (DED): DED samples submissions continue to increase in the laboratory. High percentage of submissions tested positive for Dutch elm disease caused by fungus pathogen Ophiostoma *nova-ulmi* and few were positive for Dothiorella wilt.

Insect: An insect sample submitted in the last two weeks was diagnosed as Bat bug – *Cimex pilosellus*.

Weed: Weed samples submitted are as follows:

- Barnyarn grass – *Echinochloa* sp.
- Marsh yellow cress – *Rorripa islandica*
- Red Indian paintbrush – *Castilleja miniata*

The Crop Production News is a publication of the Crops and Irrigation Branch, Saskatchewan Ministry of Agriculture
Telephone: (306) 787-4670
Email: CPN@gov.sk.ca